

PATENT ABSTRACTS OF JAPAN

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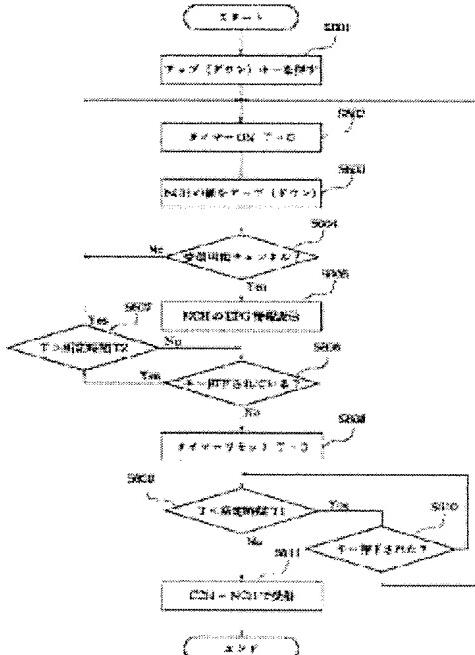
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(54) SIGNAL PROCESSOR AND SIGNAL PROCESSING METHOD

(57) Abstract:

PROBLEM TO BE SOLVED: To shorten the time until next channel-selecting operation becomes possible after channel-selecting operation, and to shorten the time until a user selects a desired in the case of executing selection operation by changing a channel number in order.

SOLUTION: A signal processor is provided with a receiving means for receiving program data concerning a program, a designating means for designating a program which has to be received by the receiving means and a control means for controlling the receiving means to receive the program designated by the designation means in accordance with non-execution of the designated operation for a prescribed period from designated operation by the designating means.



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CLAIMS

[Claim(s)]

[Claim 1]A signal processor comprising:

A reception means which receives program data concerning a program.

A setting means which specifies a program which should be received by said reception means.

A control means which controls said reception means to receive a program specified by said setting means according to the prescribed period aforementioned specification operation not having been performed from specification operation by said last setting means.

[Claim 2]The signal processor according to claim 1 when the second program is specified after specification of the first program by said setting means, and within said prescribed period, wherein said control means controls said reception means to continue receiving said first program.

[Claim 3]The signal processor according to claim 1 while said setting means is provided with a specification switch for specifying a program and said specification switch is operated continuously, wherein said control means controls said reception means to receive program data, without changing a program which said reception means receives.

[Claim 4]When said specification switch is again operated in said predetermined time after said setting means was provided with a specification switch for specifying a program and said specification switch was operated, said control means, The signal processor according to claim 1 controlling said reception means to receive program data, without changing a program which said reception means receives.

[Claim 5]The signal processor according to claim 1 when the second program is specified after specification of the first program by said setting means, and said prescribed period progress, wherein said control means controls said reception means to receive said second program.

[Claim 6]The signal processor according to claim 1, wherein said control means controls

said reception means to receive a program specified as said N time by said setting means for said every N specification operations by said setting means.

[Claim 7]The signal processor according to claim 1 provided with a setting-out means which carries out manual setting out of said predetermined time.

[Claim 8]Said reception means is provided with a displaying means which displays program information concerning an image concerning program data which received program information data concerning said program further, and was received by said reception means, and program information data, The signal processor according to claim 1, wherein said control means controls a displaying means according to receiving operation of said reception means, or specification operation of said setting means.

[Claim 9]The signal processor according to claim 8, wherein said control means controls said displaying means to display an image which starts said received program according to receiving operation of said reception means, and to display program information which starts said specified program according to specification operation of said setting means.

[Claim 10]Said displaying means displays program information concerning a program specified by said setting means, The signal processor according to claim 8 when an image concerning the same program as a program concerning said displayed program information is displayed by said displaying means, wherein said control means controls said displaying means to change a foreground color of said displayed program information.

[Claim 11]When a program concerning program data received by said reception means differs from a program specified by said setting means, said control means, The signal processor according to claim 8 controlling said displaying means to display program information of a program which starts said received program data with program information concerning said specified program on the same screen.

[Claim 12]The signal processor according to claim 11, wherein said control means controls said displaying means to forbid presenting of program information of a program which starts said received program data according to an image of a program concerning said received program data having been displayed by said displaying means.

[Claim 13]A signal processor comprising:

A reception means which receives program data concerning a program.

A setting means which specifies a program which should be received by said reception means.

The first mode in which have a control means which controls said reception means according to operation of said setting means, and said specified program is received according to specification operation according [said control means] to said setting means. The second mode in which a program specified by said setting means according to the prescribed period aforementioned specification operation not having been performed from specification operation by said last setting means is received.

[Claim 14]Said reception means is provided with a displaying means which displays

program information concerning an image concerning program data which received program information data concerning said program further, and was received by said reception means, and program information data, The signal processor according to claim 13 making said control means into said second mode when making it into said first mode when not displaying said program information by said displaying means, and displaying said program information by said displaying means.

[Claim 15]The signal processor according to claim 13 provided with a means for switching which switches said first mode and said second mode.

[Claim 16]A signal processor comprising:

A reception means which receives program data concerning a program.

A setting means which specifies a program which should be received by said reception means.

The first mode in which a program which was provided with a control means which controls said reception means according to operation of said setting means and as which said reception means was specified by said setting means according to specification operation according [said control means] to said setting means is received.

The second mode in which a program specified by said setting means according to the prescribed period aforementioned specification operation not having been performed from specification operation by said last setting means is received, The third mode in which a program specified by said setting means according to that the prescribed period aforementioned specification operation was not performed or specification operation by said setting means having broken in a prescribed time of several lines from specification operation by said setting means is received.

[Claim 17]Said reception means is provided with a displaying means which displays program information concerning an image concerning program data which received program information data concerning said program further, and was received by said reception means, and program information data, The signal processor according to claim 16 making said control means into said second mode or the third mode when making it into said first mode when not displaying said program information by said displaying means, and displaying said program information by said displaying means.

[Claim 18]The signal processor according to claim 16 provided with a means for switching which switches said first mode, said second mode, and said third mode.

[Claim 19]A signal processor comprising:

A decoding means which decodes program data concerning an inputted program.

A setting means which specifies said program which should be inputted.

A control means which controls said decoding means to decode a program specified by said setting means according to the prescribed period aforementioned specification operation not having been performed from specification operation in said last setting means.

[Claim 20]A signal processing method receiving program data concerning a program and receiving said specified program according to having specified said program which should be received and the prescribed period aforementioned specification operation not having been performed from said last specification operation.

[Claim 21]A signal processor comprising:

A reception means which receives program data concerning a program.

A means for switching which switches a receiving channel according to operation of an up-and-down key of directing a program change.

A control means which controls said means for switching not to switch a receiving channel during continuous operation of said up-and-down key.

[Claim 22]A signal processor comprising:

A reception means which receives program data concerning a program.

A means for switching which switches a receiving channel according to operation of an up-and-down key of directing a program change.

A control means which controls said means for switching not to switch a receiving channel when said up-and-down key is operated within a prescribed period from operation of said last up-and-down key.

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DETAILED DESCRIPTION

[Detailed Description of the Invention]**[0001]**

[Field of the Invention]Especially this invention relates to the selection process of a program about a television signal receiving set.

[0002]

[Description of the Prior Art]IRD (Integrated Receiver/Decoder) is known as a digital broadcasting receiving set which receives the digital satellite TV broadcast using the communications satellite (CS;Communication Satellite) performed now. In IRD, TS (Transport Stream) data by which multiplex is carried out is received, and from TS data, a video signal, an audio signal, and other data signals extract each signal, and perform decoding processing to each signal.

[0003]In this kind of device, after extracting the program data concerning a program with this selected operation from the inside of TS data according to operation of final controlling elements, such as a remote control, and performing decoding processing, the image concerning the video signal which performed decoding processing was outputted to the indicator. In order to decode the image data compressed by MPEG 2 at this time, the intra picture (henceforth, I picture) formed into the frame inner code is required. In TS of MPEG 2, the number of the intervals of two I pictures called GOP is 15, and I picture is usually transmitted every a maximum of 0.5 second.

[0004]

[Problem(s) to be Solved by the Invention]However, in the conventional digital broadcasting receiving set, There was no reception **** about the next channel selection operation until the decoding processing of the screen of the head of the image data concerning the this chosen program was completed after performing channel selection operation since he was trying to display the image of a program on an indicator whenever it performs channel selection operation. That is, after performing channel selection operation, by the time the next channel selection operation was attained, the user had to wait for channel selection operation for a maximum of 0.5 second.

[0005]In performing channel selection operation especially using an up-and-down key etc., in order to choose one channel at a time, by the time it chose the channel for which a user asks, it took time dramatically.

[0006]This invention is in the place which solves the above problems.

[0007]The purpose of further others of this invention is in the place which shortens time until the next channel selection operation is attained after channel selection operation.

[0008]The purpose of further others of this invention is in the place which shortens time until it chooses the channel for which a user asks, when changing a channel number in order and performing selection operation.

[0009]

[Means for Solving the Problem]On the bottom of such a purpose, and in a signal processor of this invention, A reception means which receives program data concerning a program, and a setting means which specifies a program which should be received by said reception means, It has a control means which controls said reception means to receive a program specified by said setting means according to the prescribed period aforementioned specification operation not having been performed from specification operation by said last setting means, and is constituted.

[0010]A reception means which receives program data concerning a program in a signal processor of this invention, Have a setting means which specifies a program which should be received by said reception means, and a control means which controls said reception means according to operation of said setting means, and said control means, It has the second mode in which a program specified by said setting means according to the prescribed period aforementioned specification operation not having been performed is received, and comprises specification operation by the first mode in which said specified program is received according to specification operation by said setting means, and said last setting means.

[0011]A signal processor of this invention comprises:

A reception means which receives program data concerning a program.

A setting means which specifies a program which should be received by said reception means.

The first mode in which a program which was provided with a control means which controls said reception means according to operation of said setting means and as which said reception means was specified by said setting means according to specification operation according [said control means] to said setting means is received.

The second mode in which a program specified by said setting means according to the prescribed period aforementioned specification operation not having been performed from specification operation by said last setting means is received, The third mode in which a program specified by said setting means according to that the prescribed period aforementioned specification operation was not performed or specification operation by said setting means having broken in a prescribed time of several lines from specification

operation by said setting means is received.

[0012]

[Embodiment of the Invention]Hereafter, the embodiment of this invention is described in detail using a drawing.

[0013]First, a first embodiment of this invention is described. Drawing 1 is a figure showing the composition of the digital-TV-broadcasting receiving set with which this invention is applied.

[0014]In drawing 1, the signal received by unillustrated an antenna or a cable is inputted into the tuner part 101. To the inputted signal, the tuner part 101 processes a recovery, an error correction, etc., and generates the digital data of the form called a transport stream. The generated transport stream (TS) data is outputted to the descrambler 102.

[0015]When the TS data in which the scramble for viewing limitation is applied are inputted into the descrambler 102 from the tuner part 101, Based on the key information for descrambling contained in TS data, and the key information outputted from the IC card control section 115, a releasing scramble is performed and it outputs to the demultiplexer 103.

[0016]The IC card control section 115 contains here the IC card in which the key information for dispelling the key information for descrambling contained in a user's contract information and TS data is stored, When there is key information for dispelling the key information for descrambling inputted from the descrambler 102, the key information is outputted to the descrambler 102.

[0017]The descrambler 102 outputs TS data to the demultiplexer 103 as it is, when the TS data in which scramble is not applied from the tuner part 101 are inputted.

[0018]The image for two or more channels into which the demultiplexer 103 was inputted from the descrambler 102, Voice data, EPG data, etc. out of the TS data by which time multiplexing is carried out. The picture image data D1 and the voice data D2 which are applied to the program under present broadcast in a channel with selected operation of the final controlling element 114 are taken out, and each is outputted to the video decoder 104 and the audio decoder 105. Here, the final controlling element 114 contains a remote control and a light sensing portion besides the final controlling element currently installed in the main part side.

[0019]The demultiplexer 103 picks out EPG data D3 from the above-mentioned TS data, and outputs them to EPG decoder 106 and the memory 107. The memory 107 memorizes EPG data D3 from the demultiplexer 103.

[0020]EPG data are periodically received by the tuner section 101, and the newest EPG data are always updated by the memory 107. EPG data are received according to the EPG-data receiving instruction by operation of a user's final controlling element 114, and the received EPG data are memorized in the memory 107.

[0021]TS data are transmitted by a packet unit and PID (PackeT IdenTificaTion) is added to

the head part of the packet. The demultiplexer 103 is reading this PID and performs discernment of the picture image data D1, the voice data D2, and EPG data D3.

[0022]Each block is connected to the common bus 118 as shown in drawing 1.

[0023]First, picture image data is explained. To the picture image data D1 inputted from the demultiplexer 103, the video decoder 104 decodes MPEG 2 and outputs the decoded picture image data to the display control part 109. The display control part 109 switches a screen according to operation of the final controlling element 114, or carries out multiplex [of the picture image data inputted from the video decoder 104, the EPG screen formation part 108 UI screen constitution part 111 and the cursor generating part 117], and is made to display it on the picture display part 112.

[0024]Here, UI screen constitution part 111 creates the screen which supports user's operation according to operation of the final controlling element 114, and outputs it to the display control part 109. The cursor generating part 117 outputs the picture image data of selection cursor to the display control part 109 so that it may display selection cursor on the screen which needs selection cursor, such as an EPG screen. The picture image data of selection cursor is outputted to the display control part 109 in order to move the selection cursor on a screen according to operation of the final controlling element 114. The EPG screen formation part 108 is mentioned later.

[0025]The picture display part 112 contains unillustrated a monitor and a video signal input terminal.

[0026]Next, voice data is explained. To the voice data D2 inputted from the demultiplexer 103, the audio decoder 105 decodes MPEG 2 and outputs the decoded voice data to DAC110. To the voice data inputted from the audio decoder 105, DAC110 processes D/A conversion and outputs it to the voice output part 113. The voice output part 113 contains unillustrated a loudspeaker and a sound signal input terminal.

[0027]And EPG data are explained. data required to constitute EPG -- "IEC13818-1 MPEG 2 SYSTEM" and corporation It is transmitted by the data structure specified by the standards "program exhibition information used for digital broadcasting" in Association of Radio Industries and Businesses (common name ARIB), etc. As main constitution data, the name of an organization channel, a broadcasting organization's name, etc., SDT which transmits the information about an organization channel (Service Description Table), The name of a bouquet (set of an organization channel), the organization channel contained, etc., BAT which transmits the information about a bouquet (Bouquet Association Table), TDT (Time Date Table) etc. which transmit EIT (Event Information Table) which transmits the information about programs, such as explanation of the name of a program, broadcast start time, and the contents, the present date, and the information on time are mentioned.

[0028]In the final controlling element 114, if the operation for displaying EPG is made, the EPG display directions from the final controlling element 114 will be inputted into the system control part 116.

[0029]When EPG display directions are inputted from the final controlling element 114, from

the memory 107, the system control part 116 reads required information, and outputs it to EPG decoder 106. EPG decoder 106 decodes to EPG data D3, and outputs decoded EPG data D4 to the EPG screen formation part 108.

[0030]The EPG screen formation part 108 generates various kinds of signals, such as a character signal for constituting an EPG screen, based on EPG data D4 and the control signal from the system control part 116 which were inputted from EPG decoder 106, and outputs them to the display control part 109. The display control part 109 outputs a video signal to the picture display part 112 so that it may give a change indication of an image screen, an EPG screen, etc.

[0031]The system control part 118 including a microprocessor Channel selection, According to operation of the final controlling element 114 of having various operation switches, such as the power supply ON, tuner section 101, descrambler 102, demultiplexer 103, each decoder section 104-106, screen constitution part 108, display control part 109, and DAC110 is controlled.

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EFFECT OF THE INVENTION

[Effect of the Invention]As explained above, according to this invention, time until the next channel selection operation is attained can be shortened after channel selection operation.

[0116]When changing a channel number in order and performing selection operation, time until it chooses the channel for which a user asks can be shortened.

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TECHNICAL PROBLEM

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MEANS

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[0024]Here, UI screen constitution part 111 creates the screen which supports user's operation according to operation of the final controlling element 114, and outputs it to the display control part 109. The cursor generating part 117 outputs the picture image data of selection cursor to the display control part 109 so that it may display selection cursor on the screen which needs selection cursor, such as an EPG screen. The picture image data of selection cursor is outputted to the display control part 109 in order to move the selection cursor on a screen according to operation of the final controlling element 114. The EPG screen formation part 108 is mentioned later.

[0025]The picture display part 112 contains unillustrated a monitor and a video signal input terminal.

[0026]Next, voice data is explained. To the voice data D2 inputted from the demultiplexer 103, the audio decoder 105 decodes MPEG 2 and outputs the decoded voice data to DAC110. To the voice data inputted from the audio decoder 105, DAC110 processes D/A conversion and outputs it to the voice output part 113. The voice output part 113 contains unillustrated a loudspeaker and a sound signal input terminal.

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[0028]In the final controlling element 114, if the operation for displaying EPG is made, the EPG display directions from the final controlling element 114 will be inputted into the

system control part 116.

[0029]When EPG display directions are inputted from the final controlling element 114, from the memory 107, the system control part 116 reads required information, and outputs it to EPG decoder 106. EPG decoder 106 decodes to EPG data D3, and outputs decoded EPG data D4 to the EPG screen formation part 108.

[0030]The EPG screen formation part 108 generates various kinds of signals, such as a character signal for constituting an EPG screen, based on EPG data D4 and the control signal from the system control part 116 which were inputted from EPG decoder 106, and outputs them to the display control part 109. The display control part 109 outputs a video signal to the picture display part 112 so that it may give a change indication of an image screen, an EPG screen, etc.

[0031]The system control part 118 including a microprocessor Channel selection, According to operation of the final controlling element 114 of having various operation switches, such as the power supply ON, tuner section 101, descrambler 102, demultiplexer 103, each decoder section 104-106, screen constitution part 108, display control part 109, and DAC110 is controlled.

[0032]The display example of the EPG screen displayed by such processing is shown in drawing 2. By operating the arrow key of the remote control guide 201, a user doubles with the program of a request of the selection cursor 202, is carrying out the depression of the determination button 506, and chooses a desired program.

[0033]Here, when performing selection decision like an EPG screen, the below-mentioned EPG information setting screen, etc. using the selection cursor 202, the remote control guide 201 is displayed on a screen.

[0034]Each operation key of the remote control guide 201 corresponds to drawing 5 with the operation key of the remote control so that it may be shown, and the key of 2, 4, 6, and 8 in the ten key of the remote control is [the left and top] equivalent to the right and a lower key, respectively. That is, when the key of 2, 4, 6, and 8 of the remote control is pressed, the system control part 116 controls the display control part 109 so that it may move the selection cursor 202 to the right and the bottom, respectively in the left and a top. The cancel button and determination button on the remote control guide 201 operate by operating the cancel button 505 and the determination button 506 of the remote control.

[0035]While displaying an EPG screen and the below-mentioned EPG information screen, as shown in drawing 5, the depression of the remote control exchange key 510 of the remote control is carried out to use a ten key and carry out the direct entry of the number for a channel change etc. If the depression of the remote control exchange key 510 is carried out, the display of the arrow key of the remote control guide 201 will be changed into the display of a ten key, and will turn into the same display as each key in the remote control of drawing 5. And the system control part 116 performs the control action according to the operation key of the remote control. However, when the remote control guide 201 is not displayed on the screen, operation reception of the remote control exchange key 510 is

forbidden.

[0036]As shown in drawing 3, in the broadcast screen which displays the image concerning the selected program, it is also possible to display the EPG information of the program currently this broadcast. The screen where 301 display the broadcast under reception, and 302 are the EPG information of the program under selection among a figure.

[0037]This EPG information 302 is displayed based on the display information set up by the EPG information setting screen as shown in drawing 4, a display position, the existence of a display, etc. In an EPG information set area the contents set area where 401 sets up the existence of the display in each item of EPG information, and 402, A positioning field for the display style at the time of making the selected item non-display and 403 to set up the display position of the EPG information in a broadcast screen, The returning button for returning to a determination button for 405 to determine the setting detail of an EPG information setting screen eventually and a front screen and 406 are the selection cursor for choosing each item.

[0038]The remote control guide on an EPG information setting screen is the same as the remote control guide 201 on the above-mentioned EPG screen, and here a user, Non-display or the display of the item is set up by doubling the selection cursor 406 with which item of EPG information in the contents set area 401, and carrying out the depression of the cancel button 505 or the determination button 506 by operating a remote control, as shown in drawing 5.

[0039]Also in the positioning field 403, the selection cursor 406 is doubled with which position, and non-display or the display of the position is set up by carrying out the depression of the cancel button 505 or the determination button 506. In drawing 4, a genre item is made non-display and it has become setting out which displays EPG information on the upper right.

[0040]And the example of composition of the remote control which is a part of final controlling element 114 is shown in drawing 5. However, this figure expresses only the button which performs operation for realizing a function required in order to describe this embodiment, and a manual operation button required for a actual receiving set is not this limitation.

[0041]It is also possible to use pointing devices, such as a mouse besides what was shown in drawing 5.

[0042]A light-emitting part for 501 to perform infrared ray communication of a remote control and the light sensing portion with which the main part of a digital broadcasting receiving set is equipped in drawing 5, The menu button for displaying the menu screen which chooses the display of a power key for 502 to turn on and off a power supply, the EPG information setting screen of the above-mentioned [503], etc., A cancel button for a ten key for 504 to input numbers, such as a channel number, and 505 to cancel the number inputted with the ten key, A silence button for a determination button for 506 to determine the number inputted with the ten key and 507 to cut an output sound, A volume button for

an up-and-down key for 508 to fluctuate a channel number and 509 to fluctuate the volume of an output sound and 510 are the remote control exchange keys for switching correspondence of a remote control key and a command.

[0043]Next, channel selection operation is explained in detail.

[0044]First, the case where input a channel number in the final controlling element 114, and channel selection is performed is explained.

[0045]A user presses the ten key of the remote control, as shown in drawing 5, and he inputs a desired channel number. Here, the main frame is provided with the indicator which is not illustrated for displaying a channel number, and changes a channel number display according to the ten key input of a remote control. The system control part 116 controls the tuner section 101 so that the data concerning the inputted channel number may receive the TS data by which multiplex is carried out. The TS data received in the tuner section 101, When the data which is inputted into the descrambler 102 and applied to the inputted channel number is scrambled, based on the key information in TS data, and the key information outputted from the IC card control section 115, a releasing scramble is performed like the above-mentioned.

[0046]It separates into the picture image data D1 and the voice data D2 in the demultiplexer 103, and the data by which the releasing scramble was carried out in the descrambler 102 is inputted into the BIDEODE coater 104 and the audio decoder 105, respectively. The video decoder 104 and the audio decoder 105 perform decoding processing to picture image data and voice data, respectively, and output it to the picture display part 112 and the voice output part 113 via display control part 109 and DAC110.

[0047]Next, the case where a desired program is chosen on an EPG screen as shown in drawing 2 is explained.

[0048]As shown in drawing 2, in an EPG screen, the order of a channel number is displayed on a vertical axis, program information is displayed on a horizontal axis in order of broadcast start time, and the selection cursor 202 in an EPG screen performs program selection. Like the above-mentioned, by operating the remote control shown in drawing 5, a user operates the remote control guide 201, and doubles and does selection decision of the selection cursor 202 to a desired program.

[0049]Even if an EPG screen is under display like the above-mentioned, it is also possible to input a channel number and to perform program selection.

[0050]Next, the case where operation of the up-and-down key 508 performs channel selection as shown in drawing 5 is explained.

[0051]Drawing 6 is a flow chart which shows operation of the system control part 116 in case operation of the up-and-down key 508 performs channel selection.

[0052]In S601, if the depression of the up-and-down key 508 is carried out as a user shows drawing 5, the timer in the system control part 116 is turned on (S602). At this time, it is considered as the time T= 0.

[0053]In S603, the value of NCH (next channel) which is a reception schedule channel is

changed. Here, a change of the value of NCH is made based on the channel number information which shows which channel exists according to up-and-down operation of a channel. Periodically, multiplex is carried out to TS data, it is transmitted to them, and channel number information is extracted by the above-mentioned demultiplexer 103 from the inside of TS data.

[0054]The system control part 116 reads a channel number larger to the next of CCH (current channel) which has received now than the inside of the existing channel, or small based on the channel program information extracted in the demultiplexer 103, and is taken as the value of NCH.

[0055]In S604, it is judged whether NCH is a ready-for-receiving ability channel. Here, based on the scramble information by which the system control part 116 is contained in TS data, and the contract information included in the IC card control section 115, NCH judges whether it is dirt no by ability ready for receiving.

[0056]When it is judged that NCH is not a ready-for-receiving ability channel, return to S602 and a timer is reset, and NCH is changed into the following value (S603). When it is judged that NCH is a ready-for-receiving ability channel, the EPG information concerning NCH is displayed (S605). Here, the system control part 116 reads the EPG data concerning NCH from the memory 107, and controls each part to output EPG information to the picture display part 112 via EPG decoder 106, the EPG screen formation part 108, and the display control part 109, as shown in drawing 3.

[0057]And in S606, when it judges whether the up-and-down key 508 is pressed and it is judged that the up-and-down key 508 is pressed, it is judged whether the time T measured by the above-mentioned timer is larger than the predetermined time T2 set up beforehand (S607). That is, since the up-and-down key 508 continues being pressed, it is judged whether the predetermined time T2 passed.

[0058]When the time T judges that it is larger than the predetermined time T2, it returns to S602 and processing of an EPG information display of NCH is repeated. When the time T judges that it is smaller than the predetermined time T2, it returns to S606.

[0059]When it is judged that the up-and-down key 508 is not pressed in S606, the above-mentioned timer is reset and the time after the depression of the up-and-down key 508 is stopped is measured (S608). At this time, it is considered as the time T= 0. In S609, it is judged whether the time T is larger than the predetermined time T1 set up beforehand (S609). That is, after the depression of the up-and-down key 508 is stopped, it is judged whether the predetermined time T1 passed.

[0060]When it is judged that it judges whether the up-and-down key 508 was pressed again, and is not pushed in S610 when the time T judges that it is smaller than the predetermined time T1, it returns to S609. When it is judged that the up-and-down key 508 was pressed, it returns to S602 and EPG information display processing of NCH is performed.

[0061]In S609, when the time T judges that it is larger than the predetermined time T1 (i.e.,

after stopping the depression of the up-and-down key 508, when it judges that the predetermined time T1 passed), The value of CCH (current channel) which is the channel received now is changed into the value of NCH, and the tuner section 101 is controlled in order to receive NCH (S611).

[0062]That is, without changing the received program until it reaches, in a broadcast screen, 116 continues and displays the broadcast image of an identical program, makes only an EPG information display correspond to a selector channel, and is changed into the system control part S611.

[0063]Here, the predetermined time T1 and the predetermined time T2 are set up in a time setting screen, as shown in drawing 7. The selection display of this time setting screen is carried out from the menu screen which is not illustrated [which was displayed by carrying out the depression of the menu button 503 of the remote control].

[0064]In a time setting screen, if a number is inputted into the setting field of T1 and the depression of the determination button 506 is carried out by operation of the ten key 504 of the remote control, unillustrated cursor will move to the setting field of T2. If a number is inputted into the setting field of T2 and the depression of the determination button 506 is carried out, unillustrated cursor will move to the setting field of T1.

[0065]In this way, in order to determine eventually T1 and T2 which were set up, the determination button 506 is pushed for several seconds, and a time setting screen is ended.

[0066]The predetermined time T1 and T2 can be set as a unit for 0.1 second from 0 second to 5 seconds, and the value of CCH is changed into the value of NCH at the same time the depression of the up-and-down key 508 stopped, when set as T1= 0 second (S611 of drawing 6).

[0067]Thus, when operation of the up-and-down key of a channel performs channel selection in this embodiment, Since the channel to receive is changed for the first time when the up-and-down key is not again pressed after a depression stop of an up-and-down key and into predetermined time, The time concerning the decoding processing of the picture image data in each channel for which a user does not ask can be deleted, and time until it chooses the channel of a user desire can be shortened.

[0068]In this embodiment, since the EPG information display is changed according to operation of an up-and-down key, the program of a user desire can be found, checking EPG information.

[0069]Since the conditioning to time until the up-and-down key is again pressed after a depression stop of the depression duration time of an up-and-down key and an up-and-down key can be changed by user's operation in this embodiment, The timing which shifts to the processing to the following channel number can be changed into the timing of a user desire, and more flexible channel selection operation can be performed.

[0070]For example, time until the up-and-down key is again pressed after the depression duration time of an up-and-down key and a depression stop of an up-and-down key is set to

a channel for a long time as conditions from which it shifts to the processing to the following channel number to shift, checking EPG information.

[0071]Although the predetermined time T1 and T2 can be set up by unit for 0.1 second in this gestalt till 0 to 5 seconds, the predetermined time T1 and T2 is good within limits which inconvenience does not produce at the time of channel operation also as setting out to arbitrary time being possible, without restricting to this time.

[0072]Although the predetermined time T1 and T2 is set up in inputting a number in a time setting screen in this embodiment, The interval of the depression is made into predetermined time by carrying out the depression of the arbitrary operation keys other than power key 502, menu button 503, cancel button 505, and determination button 506 twice, and it may be made to make it become final and conclusive with the determination button 506 in the time setting screen which is not illustrated [different] from this gestalt.

[0073]In this embodiment, when the up-and-down key is not again pressed after a depression stop of an up-and-down key and into predetermined time, have changed the channel selection channel in a tuner section, but. The channel selection channel in a tuner section is made to change according to the depression of an up-and-down key, and when the up-and-down key is not again pressed after a depression stop of an up-and-down key and into predetermined time, it may be made to start operation of each decoder section for the first time.

[0074]Although the remote control guide was displayed in the EPG information setting screen shown in the EPG screen shown in drawing 2, and drawing 4 and the remote control guide was operated by operation of the remote control of the final controlling element 114 in this embodiment, By equipping the remote control of the final controlling element 114 with an arrow key etc., movement of selection cursor and a decision of selections may be made via a remote control guide.

[0075]Although the remote control guide in the EPG information setting screen shown in the EPG screen shown in drawing 2 and drawing 4 is operated by operation of the remote control of the final controlling element 114 in this embodiment, A remote control guide may be operated by operation of the final controlling element of attachment on the main part of a digital-TV-broadcasting receiving set, without restricting to the remote control of the final controlling element 114.

[0076]The EPG information concerning the newly received channel is good after predetermined time progress also as composition which is automatically eliminated from a broadcast screen top.

[0077]Next, a second embodiment of this invention is described in detail.

[0078]The digital-TV-broadcasting receiving set in this embodiment is provided with the same composition as the digital-TV-broadcasting receiving set of a first embodiment.

[0079]The screen confirmation mode in which the channel received according to operation of the up-and-down key 508 is changed when the point that this embodiment differs from a first embodiment performs channel selection by operation of the up-and-down key 508 of a

channel, The first mode of a high-speed change in which the first channel to receive is changed when the up-and-down key 508 is not again pressed after a depression stop of the up-and-down key 508 and into predetermined time, When the up-and-down key 508 is not again pressed after a depression stop of the up-and-down key 508 and into predetermined time, it is a point provided with the second mode of a high-speed change in which it not only changes the channel to receive, but it changes the channel received for every further predetermined channel.

[0080]The basic setting picture which sets up each above-mentioned mode is shown in drawing 8. Drawing 8 is the screen which equipped the EPG information setting screen in a first embodiment with the mode setting field, and is as above-mentioned except the setting-out matter in a mode setting field, and the setting-out matter in a display position set area.

[0081]First, mode setting is explained. The setting-out selection display in the first mode of a high-speed change that 801 does not receive immediately after operation of the up-and-down key 508 like a first embodiment in drawing 8 as for a mode setting field and 802, Although 803 does not receive immediately after operation of the up-and-down key 508 like a first embodiment, The setting-out selection display in the second mode of a high-speed change in which the channel received for every predetermined channel is changed, and 804 are the setting-out selection displays in the screen confirmation mode in which the channel immediately received after operation of the up-and-down key 508 is changed.

[0082]Like the above-mentioned, the mode setting in drawing 8 operates a remote control, doubles selection cursor with each mode display, is carrying out the depression of the determination button 506 or the cancel button 505, and performs setting out and the reset in each mode.

[0083]In setting out in the second mode of a high-speed change, if selection cursor is doubled and the depression of the determination button 506 is carried out to the setting-out selection display 803 in the second mode of a high-speed change like the above-mentioned, the setting field of the number of times of a channel change will be in the state in which a setting variation is possible. Here, on the setting field of the number of times of a channel change, which number to 1-20 is displayed, and the number fluctuates by operating the arrow key in the remote control guide 201 to it.

[0084]Next, setting out of an EPG information display position is explained. By doubling the selection cursor 406 with any of four angles of the screen in the display position set area 403 they are, and carrying out the depression of the cancel button 505 or the determination button 506 by remote control operation, the EPG information in the selected position is non-display, or a display is set up. In the selected display position, one of the EPG information display of NCH and the EPG information displays of CCH can be set up by repeating and carrying out the depression of the determination button 506.

[0085]Here, although the contents which display the EPG information of NCH in the contents set area 401 of a basic setting picture are set up, let EPG information of CCH be a channel number and a program title.

[0086]In the basic setting picture of drawing 8, when the up-and-down key 508 is not again pressed after a depression stop of the up-and-down key 508 and into predetermined time, it not only changes the first channel to receive, but it is set up change a receiving channel for every ten channel changes. It is set up display the EPG information of NCH on the screen upper right, and display the EPG information of CCH on the screen lower right.

[0087]Next, channel selection operation is explained.

[0088]The channel selection operation of each mode in the case where input a channel number in the final controlling element 114, and channel selection is performed, and the case of choosing a desired program on an EPG screen is the same as the operation in a first embodiment.

[0089]And operation in case operation of the up-and-down key 508 performs channel selection is explained.

[0090]In screen confirmation mode, the image which changes the channel received according to operation of the up-and-down key 508, and starts the changed channel is displayed. The operation in this case is the same operation as the channel selection by the direct number input in a first embodiment, or the channel selection by the selection on an EPG screen.

[0091]However, when displaying EPG information in screen confirmation mode, only the EPG information of CCH which has received now is displayed.

[0092]In the first mode of a high-speed change, it is the same as that of the operation in a first embodiment. However, about EPG information, the EPG information of CCH which has received the EPG information of NCH and now which was specified by the up-and-down key 508, i.e., the channel currently displayed on the broadcast screen, is displayed on a broadcast screen.

[0093]The EPG information of NCH is changed according to the depression of the up-and-down key 508, and is displayed in red. The channel to receive is changed, and when the channel currently displayed on NCH specified by the up-and-down key 508 and a broadcast screen becomes the same, the EPG information of NCH is green and is displayed.

[0094]When the channel and NCH which show the EPG information of CCH on the broadcast screen differ from each other, the EPG information of NCH is independently displayed on a broadcast screen. That is, while NCH is changed by the depression of the up-and-down key 508, it is displayed on a broadcast screen, the channel to receive is changed, and when the channel currently displayed on NCH specified by the up-and-down key 508 and a broadcast screen becomes the same, it is eliminated from a broadcast screen top.

[0095]The case where operation of the up-and-down key 508 performs channel selection in the second mode of a high-speed change is explained. Drawing 9 is a flow chart which shows operation of the system control part 116 in case operation of the up-and-down key 508 performs channel selection.

[0096]Operation of S901-S904 is the same as operation of drawing 6 of S601-S604. In

S905, 1 is added to the counter which counts the number of times of change of a channel which can receive. In S906, it is judged whether it is more than the number of times N of change which the number of times of change of the channel set up in the above-mentioned basic setting picture.

[0097]When it is judged that the number of times of change is N times or more, the value of NCH is made into the value of CCH, and the tuner section 101 is controlled in order to receive CCH (S907). In S908, the EPG information of NCH currently displayed on the display position set up in the above-mentioned basic setting picture is changed into the EPG information of the channel set to CCH, and it displays in red until the image concerning CCH is displayed on a screen.

[0098]And simultaneously with display ****, the image concerning CCH changes the EPG information of NCH into a screen green, and eliminates the EPG information of CCH from a broadcast screen top. The counter which counts the number of times of change is reset (S909), and it progresses to S913.

[0099]When it judges whether the number of times of change is 1 time when it is judged that the number of times of change is not N times or more in S906 (S910) and it is judged that the number of times of change is 1 time, it is green to the display position set up in the above-mentioned basic setting picture, and the EPG information of CCH is displayed on it (S911). When it is judged that the number of times of change is not 1 time, the EPG information of NCH is displayed on the display position set up in the above-mentioned basic setting picture in red (S912).

[0100]Operation of S913-S917 is the same as operation of drawing 6 of S606-S610.

[0101]In S918, when it judges whether the value of CCH is equal to the value of NCH and it is judged that the value of CCH is equal to the value of NCH (i.e., when the channel received by the channel change of the Nth prescribed frequency is changed), channel selection operation is ended. When it is judged that the value of CCH differs from the value of NCH, in S919, the value of NCH is made into the value of CCH, and the tuner section 101 is controlled in order to receive CCH.

[0102]It is a display example of the EPG information displayed on drawing 10 based on setting out in the basic setting picture shown in drawing 8. EPG information 302 of NCH is displayed on the screen upper right, and when it is the image which it was displayed by the up-and-down key 508 in red during channel selection, and was displayed on the broadcast screen, and a corresponding channel, it is green and is displayed. EPG information 1001 of CCH is displayed on the screen lower right, and when it is the image which was green, was displayed and was displayed on the broadcast screen, and a corresponding channel, it is eliminated from a screen top.

[0103]Thus, when operation of the up-and-down key of a channel performs channel selection in this embodiment, Since the channel to receive is changed for the first time when the up-and-down key is not again pressed after a depression stop of an up-and-down key and into predetermined time, The time concerning the decoding processing of the

picture image data in each channel for which a user does not ask can be deleted, and time until it chooses the channel of a user desire can be shortened.

[0104]In this embodiment, since the EPG information display is changed according to operation of an up-and-down key, the program of a user desire can be found, checking EPG information.

[0105]Since the conditioning to time until the up-and-down key is again pressed after a depression stop of the depression duration time of an up-and-down key and an up-and-down key can be changed by user's operation in this embodiment, The timing which shifts to the processing to the following channel number can be changed into the timing of a user desire, and more flexible channel selection operation can be performed.

[0106]For example, time until the up-and-down key is again pressed after the depression duration time of an up-and-down key and a depression stop of an up-and-down key is set to a channel for a long time as conditions from which it shifts to the processing to the following channel number to shift, checking EPG information.

[0107]Although the predetermined time T1 and T2 can be set up by unit for 0.1 second in this gestalt till 0 to 5 seconds, the predetermined time T1 and T2 is good within limits which inconvenience does not produce at the time of channel operation also as setting out to arbitrary time being possible, without restricting to this time.

[0108]Although the predetermined time T1 and T2 is set up in inputting a number in a time setting screen in this embodiment, The interval of the depression is made into predetermined time by carrying out the depression of the power key 502, the menu screen key 503, the canceling key 505, and the arbitrary operation keys other than decision key 506 twice, and it may be made to make it become final and conclusive by the decision key 506 in the time setting screen which is not illustrated [different] from this gestalt.

[0109]Although the remote control guide was displayed in the EPG information setting screen shown in the EPG screen shown in drawing 2, and drawing 4 and the remote control guide was operated by operation of the remote control of the final controlling element 114 in this embodiment, By equipping the remote control of the final controlling element 114 with an arrow key etc., movement of selection cursor and a decision of selections may be made via a remote control guide.

[0110]Although the remote control guide in the EPG information setting screen shown in the EPG screen shown in drawing 2 and drawing 4 is operated by operation of the remote control of the final controlling element 114 in this embodiment, A remote control guide may be operated by operation of the final controlling element of attachment on the main part of a digital-TV-broadcasting receiving set, without restricting to the remote control of the final controlling element 114.

[0111]It is green and the EPG information of displayed NCH is good after predetermined time progress also as composition which is automatically eliminated from a broadcast screen top.

[0112]When the picture image data displayed on the EPG information and the broadcast

screen of NCH does not correspond, the EPG information of NCH is displayed in red, in this embodiment, when it corresponds, it is green and is displaying, but arbitrary colors may be sufficient as this foreground color, without restricting to red and green.

[0113]In screen confirmation mode, it may set up displaying the channel number corresponding to a broadcast screen, without displaying EPG information all over a broadcast screen, and displaying EPG information all over a broadcast screen in the high-speed change first or the second mode as a default.

[0114]In this embodiment, when the up-and-down key is not again pressed after a depression stop of an up-and-down key and into predetermined time, have changed the channel selection channel in a tuner section, but. The channel selection channel in a tuner section is made to change according to the depression of an up-and-down key, and when the up-and-down key is not again pressed after a depression stop of an up-and-down key and into predetermined time, it may be made to start operation of each decoder section for the first time.

[Translation done.]

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DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]

[Drawing 1]It is a figure showing the composition of the digital-TV-broadcasting receiving set with which this invention is applied.

[Drawing 2]It is a figure showing the display example of an EPG screen.

[Drawing 3]EPG information is a figure showing the display example of the broadcast screen by which multiplex was carried out.

[Drawing 4]It is a figure showing the display example of an EPG information setting screen.

[Drawing 5]It is a figure showing an example of the remote control contained in the final controlling element 114.

[Drawing 6]It is a flow chart which shows channel selection operation of the system control part 116 in a first embodiment.

[Drawing 7]It is a figure showing the display example of a time setting screen.

[Drawing 8]It is a figure showing the display example of a basic setting picture.

[Drawing 9]It is a flow chart which shows channel selection operation of the system control part 116 in a second embodiment.

[Drawing 10]It is a figure showing the display example of the broadcast screen which carried out multiplex [of the EPG information of NCH and CCH].

[Translation done.]

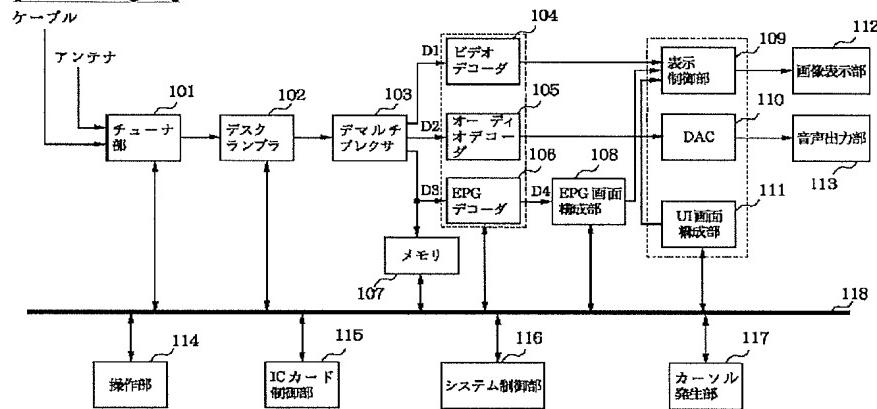
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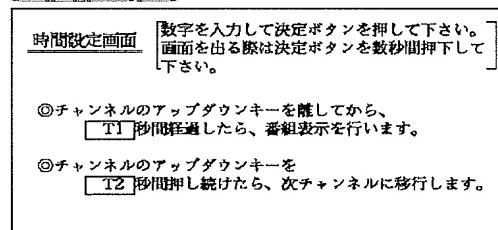
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DRAWINGS

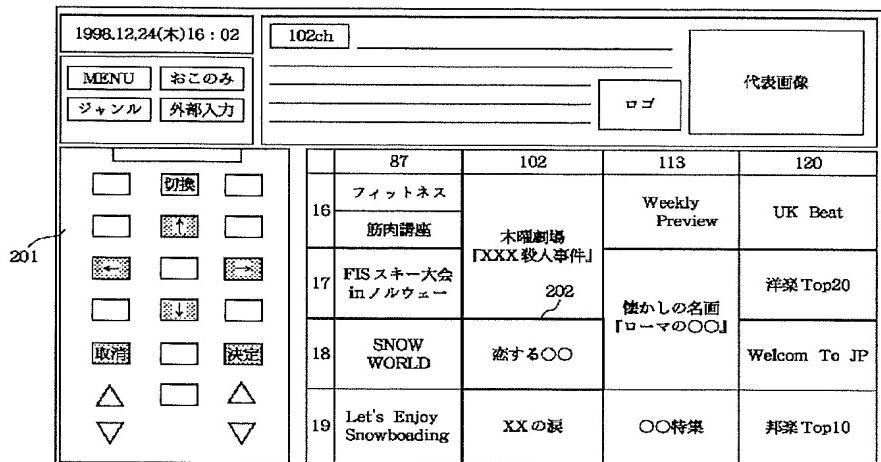
[Drawing 1]



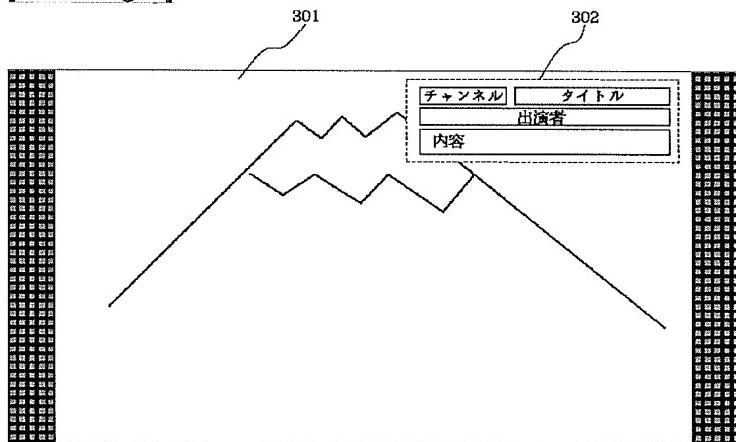
[Drawing 7]



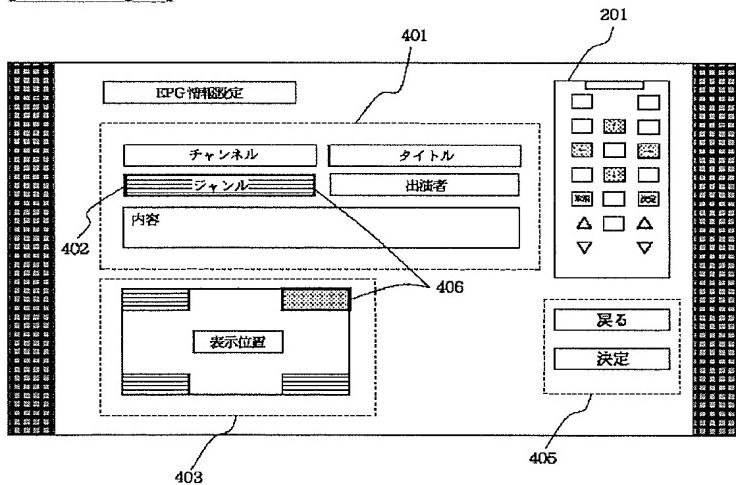
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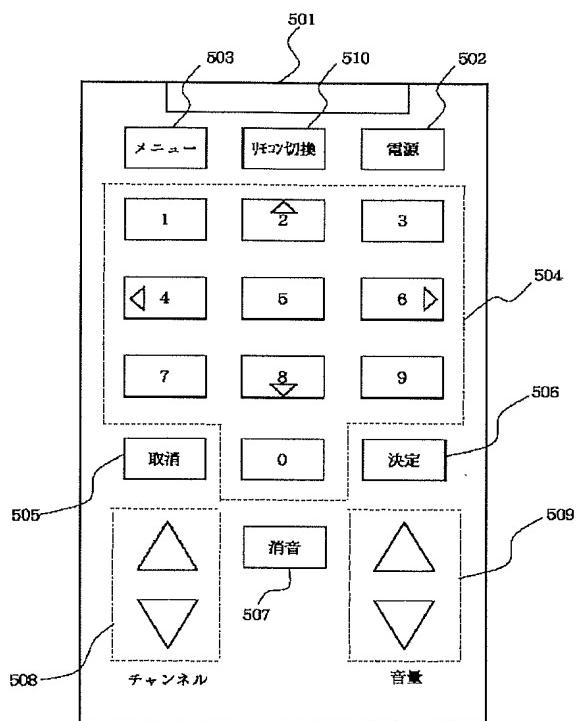
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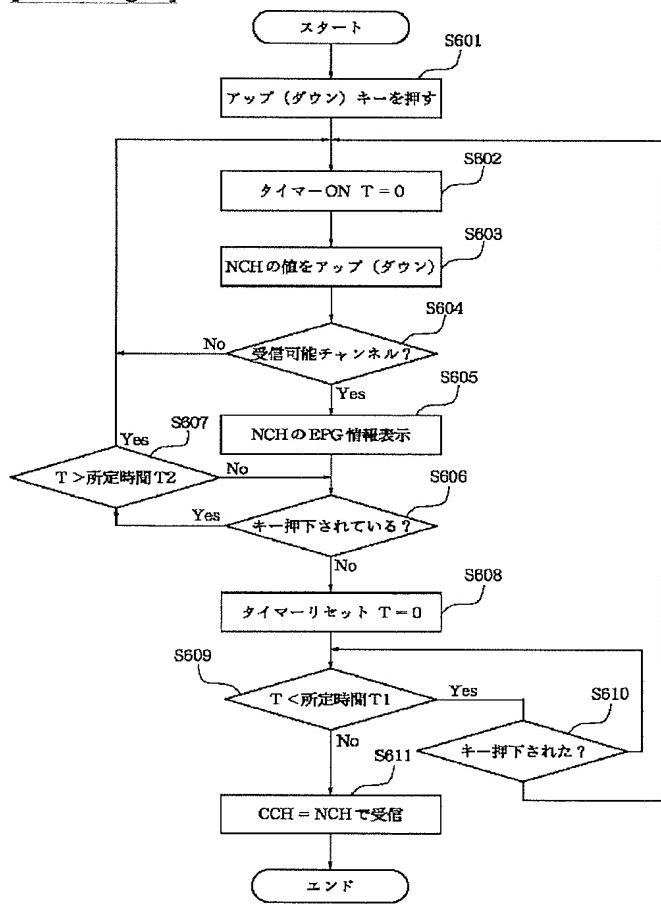
[Drawing 4]



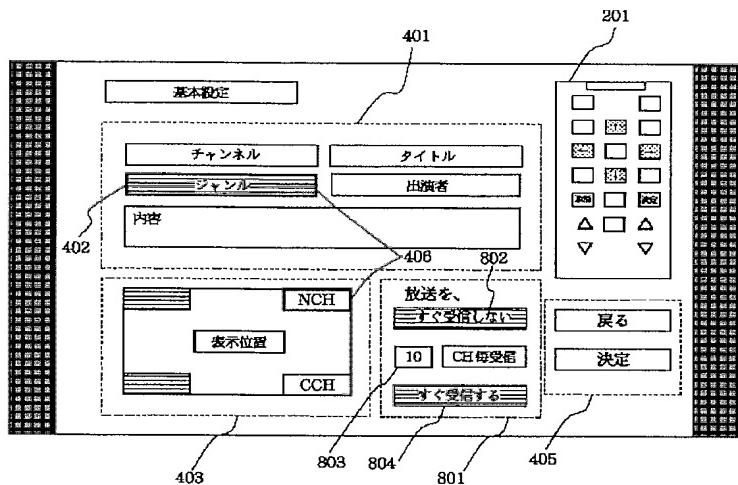
[Drawing 5]



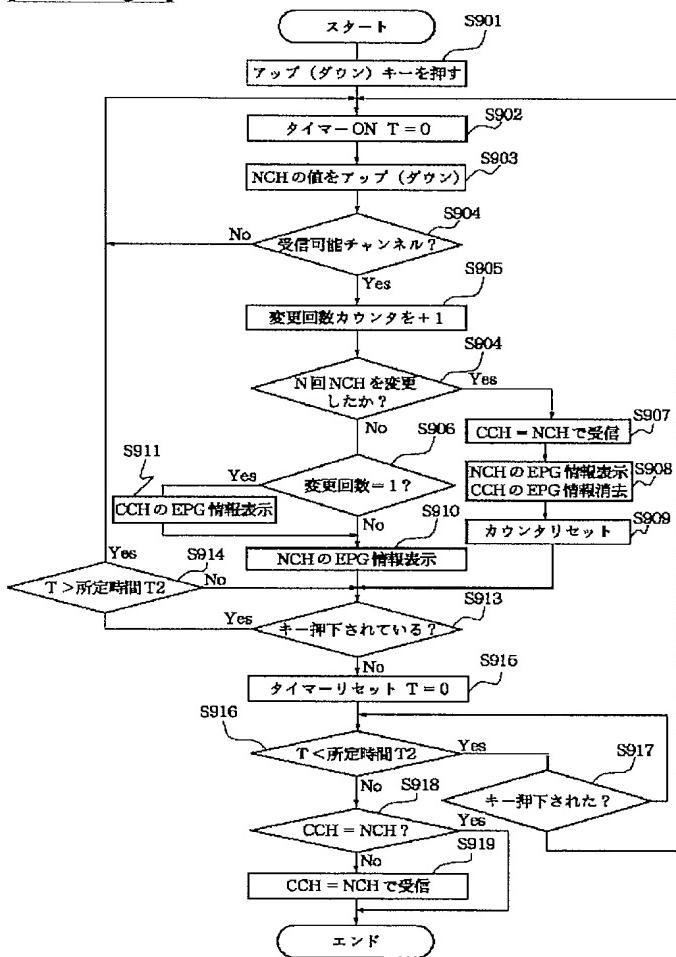
[Drawing 6]



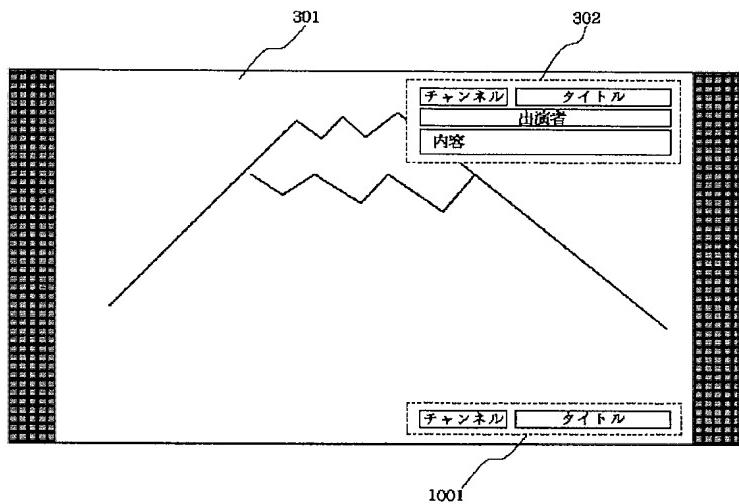
[Drawing 8]



[Drawing 9]



[Drawing 10]



[Translation done.]

* NOTICES *

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1. This document has been translated by computer. So the translation may not reflect the original precisely.
2. **** shows the word which can not be translated.
3. In the drawings, any words are not translated.

CORRECTION OR AMENDMENT

[Kind of official gazette] Printing of amendment by the regulation of 2 of Article 17 of Patent Law

[Section classification] The 3rd classification of the part VII gate

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H04N 7/08 A

[Written amendment]

[Filing date] August 24, Heisei 18 (2006.8.24)

[Amendment 1]

[Document to be Amended]Specification

[Item(s) to be Amended]Claim

[Method of Amendment]Change

[The contents of amendment]

[Claim(s)]

[Claim 1]A reception means which receives a television signal,

A setting means which specifies the channel concerned in order to receive a predetermined channel by said reception means,

A judging means which judges whether operation of specifying a different channel from a prescribed period and the channel concerned is performed after channel designating operation by said setting means is performed,

A signal processor having a control means which controls said reception means so that a television signal in this channel may be received when operation of specifying a different channel from a prescribed period and this channel was not performed and said judging means judges.

[Claim 2]When the second different channel from said first channel is specified after specification of the first channel by said setting means, and within said prescribed period, The signal processor according to claim 1, wherein said control means performs control which continues reception of a television signal concerning said first channel, without receiving a television signal in said second channel.

[Claim 3]Said control means so that a television signal concerning said second channel may be received, when the second different channel from said first channel is specified after specification of the first channel by said setting means, and said prescribed period progress, The signal processor according to claim 1 controlling said reception means.

[Claim 4]The signal processor according to claim 1, wherein it has a setting-out means which can be set up by a manual and said judging means judges a value of said prescribed period using a value of said prescribed period set up by said setting-out means.

[Claim 5]An acquisition means which acquires program information data of a program in a received television signal,

It has an output means which outputs to an indicator program information generated based on an image concerning a channel received by said reception means, and said program information data,

After specification of said first channel according [said control means] to said setting means, When said second different channel from said first channel is specified within said prescribed period, while outputting said program information corresponding to a program broadcast in said second channel now to said indicator, The signal processor according to claim 2 characterized by controlling said output means so that an image of a television signal concerning said first channel may be outputted to said indicator.

[Claim 6]The signal processor comprising according to claim 1:

The first mode in which said control means controls said reception means based on a

decision result of said judging means.

The second mode that controls said reception means to receive a television signal in the specified channel concerned, without performing a judgment of said judging means when channel designating operation by said setting means is performed.

[Claim 7]A reception means which receives a television signal,

An input means which receives an operational input of button grabbing which can switch the channel concerned one by one in order to receive a predetermined channel by said reception means,

A judging means which judges whether it is the operation in which an operational input received by said input means continues and carries out the depression of a prescribed period and the button concerned,

When judged with continuing a prescribed period and the button concerned and being pushed, A signal processor having a control means which performs control which displays program information data corresponding to a channel which does not make a change of a channel received by said reception means, but is different from the channel concerned on an indicator.

[Claim 8]A receiving process which receives a television signal,

A specification process of specifying the channel concerned in order to receive a predetermined channel by said receiving process,

A determination process which judges whether operation of specifying a different channel from a prescribed period and the channel concerned is performed after channel designating operation by said specification process is performed,

A signal processing method having the control process of controlling said receiving process so that a television signal in this channel may be received when operation of specifying a different channel from a prescribed period and this channel was not performed and it is judged by said determination process.

[Claim 9]When the second different channel from said first channel is specified after specification of the first channel by said specification process, and within said prescribed period, The signal processing method according to claim 8 performing control which continues reception of a television signal concerning said first channel without receiving a television signal in said second channel at said control process.

[Claim 10]So that a television signal concerning said second channel may be received, when the second different channel from said first channel is specified in said control process after specification of the first channel by said specification process, and said prescribed period progress, The signal processing method according to claim 8 controlling said receiving process.

[Claim 11]The signal processing method according to claim 8 judging using a value of said prescribed period which has a setting-out process which can be set up by a manual, and was set up at said setting-out process by said determination process in a value of said

prescribed period.

[Claim 12] An acquisition process of acquiring program information data of a program in a received television signal,

It has an output process which outputs to an indicator program information generated based on an image concerning a channel received by said receiving process, and said program information data,

After specification of said first channel according to said specification process at said control process, When said second different channel from said first channel is specified within said prescribed period, while outputting said program information corresponding to a program broadcast in said second channel now to said indicator, The signal processor according to claim 9 characterized by controlling said output process so that an image of a television signal concerning said first channel may be outputted to said indicator.

[Claim 13] The signal processing method comprising according to claim 8:

The first mode that controls said receiving process by said control process based on a decision result of said determination process.

The second mode that controls said receiving process to receive a television signal in the specified channel concerned, without performing a judgment by said determination process when channel designating operation by said specification process is performed.

[Claim 14] A receiving process which receives a television signal,

An input process which receives an operational input of button grabbing which can switch the channel concerned one by one in order to receive a predetermined channel by said receiving process,

A determination process which judges whether it is the operation in which an operational input received by said input process continues and carries out the depression of a prescribed period and the button concerned,

When judged with continuing a prescribed period and the button concerned and being pushed, A signal processing method having the control process of performing control which displays program information data corresponding to a channel which does not make a change of a channel received by said receiving process, but is different from the channel concerned on an indicator.

[The amendment 2]

[Document to be Amended] Specification

[Item(s) to be Amended] 0001

[Method of Amendment] Change

[The contents of amendment]

[0001]

[Field of the Invention]

Especially this invention relates to the selection process of a channel about a signal processor.

[Amendment 3]

[Document to be Amended]Specification

[Item(s) to be Amended]0009

[Method of Amendment]Change

[The contents of amendment]

[0009]

[Means for Solving the Problem]

The bottom of such a purpose is provided with the following.

A reception means which receives a television signal in a signal processor of this invention.

A setting means which specifies the channel concerned in order to receive a predetermined channel by said reception means.

A judging means which judges whether operation of specifying a different channel from a prescribed period and the channel concerned is performed after channel designating operation by said setting means is performed.

A control means which controls said reception means to receive a television signal in this channel when operation of specifying a different channel from a prescribed period and this channel was not performed and said judging means judges.

In order to receive a predetermined channel in a signal processor of this invention by reception means which receives a television signal, and said reception means, An input means which receives an operational input of button grabbing which can switch the channel concerned one by one, A judging means which judges whether it is the operation in which an operational input received by said input means continues and carries out the depression of a prescribed period and the button concerned, When judged with continuing a prescribed period and the button concerned and being pushed, a change of a channel received by said reception means is not made, but it has a control means which performs control which displays program information data corresponding to a different channel from the channel concerned on an indicator.

[Amendment 4]

[Document to be Amended]Specification

[Item(s) to be Amended]0010

[Method of Amendment]Change

[The contents of amendment]

[0010]

In order to receive a predetermined channel in the signal processing method of this invention by the receiving process which receives a television signal, and said receiving process, The determination process which judges whether operation of specifying a different channel from a prescribed period and the channel concerned is performed after channel designating operation by the specification process of specifying the channel concerned, and said specification process is performed, When operation of specifying a

different channel from a prescribed period and this channel was not performed and it is judged by said determination process, it has the control process of controlling said receiving process so that the television signal in this channel may be received.

In order to receive a predetermined channel in the signal processing method of this invention by the receiving process which receives a television signal, and said receiving process, The input process which receives the operational input of button grabbing which can switch the channel concerned one by one, The determination process which judges whether it is the operation in which the operational input received by said input process continues and carries out the depression of a prescribed period and the button concerned, When judged with continuing a prescribed period and the button concerned and being pushed, a change of the channel received by said receiving process is not made, but it has the control process of performing control which displays the program information data corresponding to a different channel from the channel concerned on an indicator.

[Amendment 5]

[Document to be Amended]Specification

[Item(s) to be Amended]0011

[Method of Amendment]Deletion

[The contents of amendment]

[Translation done.]